Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-39 are pending in the application, with 1, 14, 15, and 27 being the independent claims.

Based on the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Response to Examiner's Comments in the present Office Action

The Examiner has maintained the rejection of claims 1, 4, 5, 10-15, 18, 19 and 24-27 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,600,744 to Carr *et al.* ("Carr"). In the previous Amendment and Reply, filed September 22, 2006, Applicants traversed these rejections on the basis that Carr does not teach or suggest a method for classifying a data packet in a network interface that includes the step of "generating a plurality of program modules, each of said plurality of program modules for testing for adherence to at least one corresponding classification parameter" as recited by independent claims 1 and 15 or the step of "generating a plurality of optimized program modules, each of said plurality of program modules for testing for adherence to at least one corresponding classification parameter" as recited by independent claim 14, or a computer program product that includes "means for enabling [a] processor to generate a plurality of program modules, each of said plurality of program modules for testing for adherence to at least one corresponding classification parameter" as recited by independent claim 27.

The Examiner has also maintained the rejection of claims 2, 6-9, 16, 20-23, 28 and 30-39 under 35 U.S.C. § 103(a) as unpatentable over Carr in view of Synnestvedt, the rejection of claims 3 and 17 under 35 U.S.C. § 103(a) as unpatentable over Carr in view of Connery, and the rejection of claim 29 under 35 U.S.C. § 103(a) as unpatentable over Carr in view of Synnestvedt and further in view of Connery. In the previous Amendment and Reply, Applicants traversed these rejections as well because Synnestvedt and Connery did not remedy the deficiencies of Carr with respect to the independent claims from which these claims depend.

In the "Response to Arguments" Section of the present office action, the Examiner states that the Applicants' arguments with respect to Carr are not persuasive because (1) the features upon which Applicants relied in traversing the rejections are not recited in the rejected claims; (2) various components shown if Fig. 3 of Carr "are implemented through logic on DRAM process, known in the art to be a software application, that meets the disclosure of Applicant's generated program modules"; and (3) the recitation "network interface" has no patentable weight because the recitation occurs within the preamble, and would be met by the disclosure of Carr even if placed in the body of the claim. Each of these assertions will now be addressed.

The Examiner's Assertion that the Recited "Program Modules" Could be Construed to Cover Hardware is Incorrect

The Examiner states that Applicants' argument that Carr does not teach or suggest the generation of software-implemented program modules is not persuasive because independent claims 1, 14, 15 and 27 do not recite that the claimed "program modules" are implemented in software. However, Applicants respectfully submit that a person skilled in the art would understand the term "program modules" to mean a module

implemented in software, since the term includes the word *program* (as in "computer

program"). Conversely, a person skilled in the art would certainly <u>not</u> understand the

term "program module" to refer to hardware.

Furthermore, each of independent claims 1, 14, 15 and 27 recite that the claimed

"program modules" are "executed". Again, Applicants submit that a person skilled in the

art would not understand hardware modules to be "executed". Rather, "executed" is a

term of art that is applied to computer programs. Thus, these claims make abundantly

clear that the recited "program modules" are implemented in software.

Finally, independent claim 27 is a computer program product claim that recites

"means for enabling [a] processor to generate a plurality of program modules".

Applicants submit that a person skilled in the art would not understand a processor to be

capable of generating *hardware*, and thus for this reason also would understand the

recited program module to refer to software.

For the foregoing reasons, Applicants submit that a person skilled in the art

would understand the "program modules" recited in independent claims 1, 14, 15 and 27

to be implemented in software.[1] Thus, Applicants arguments' that Carr does not teach

the generation of software-implemented program modules as presented in the

Amendment and Reply filed September 22, 2006 still stand.

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[1] The Examiner argues that "[a]lthough the claims are interpreted in light of the specification, limitations from the specification are not read into the claims", citing *In re Van Geuns,* 988 F.2d 1181 (Fed. Cir. 1993). However, in the present case, Applicants are not reading limitations into the claims—rather, by use of the terms "program modules" and "executing", which one skilled in the art would immediately understand to refer to software, the software limitation is already present in the claims. Words of a claim are to be given their "ordinary and customary meaning." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). The ordinary and customary meaning "is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, *i.e.*, as of the effective filing date of the patent application." *Phillips v. AWH Corp,* 415 F.3d 1303 (Fed. Cir. 2005).

***The Examiner's Assertion that Components of Carr, Implemented in a DRAM
Process, Meet the Disclosure of Applicant's Generated "Program Modules" is
incorrect***

The Examiner also asserts that Figure 3 of Carr discloses components implemented in a DRAM process that meet the disclosure of Applicant's generated "program modules."

Carr is directed to a packet classification engine that stores rules or parameters for classifying the packets in a memory structure, such as a DRAM. See Carr, col. 2, ll. 32-33 ("The rules or parameters for classifying the packets are stored in a memory structure.") The memory structure receives a set of selection signals and provides a selected set of rules to a comparison block 50. *See* Carr, Figure 2. The comparison block 50 includes comparators that perform different types of comparisons between the selected classification parameters and information derived from the header of a packet (termed a "key"). *See* Carr, col. 7, ll. 26-28. Such comparison operations include a 5-bit equal compare, a 32-bit mask and compare, a 12-bit mask and compare, an 8-bit mask and range, and a 16-bit range. *See* Carr, col. 7, ll. 29-60, FIG. 2. According to Carr, the comparison block is implemented in hardware. *See* Car, col. 12, ll. 9-11 ("Preferably, all the components illustrated in FIG. 3 are implemented on a single integrated circuit that is dedicated to performing packet classification operations.").

As noted above, the comparison operations of Carr are implemented in hardware and are thus not easily modified. Even if we assume, arguendo, that it is possible to implement comparison operations in a DRAM process, Carr makes no effort to teach or suggest of such an implementation as the Examiner alleges. In fact, Carr states that "an overabundance of comparators may be provided to allow maximum flexibility in the

types of comparisons performed." See Carr, col. 6, ll. 3-5. It is well known in the art

that a benefit of software over hardware is flexibility. Carr would not need to provide an

overabundance of comparators to increase flexibility (in the type of comparisons

performed) if the comparisons were implemented in software. Software would allow a

desired comparison to be simply <u>generated</u>. Furthermore, Carr states that the

comparators may be used for other protocols, "but with some limitations." *See* Carr, col.

5, ll. 55-57. The routing of bits in the key and rules can be manipulated, as Carr

suggests, to allow for numerous protocols to be supported. *See* Carr, col. 5, ll. 59-65.

Again, "routing of bits" is well known in the art to specify the physical destination of an

electrical signal in a hardware application.

     In contrast to the teaching of Carr, the invention of claim 1 does not perform

comparison operations in hardware. Rather, in claim1, a program module is <u>generated</u>

that tests for adherence to at least one corresponding classification parameter." As

described in the specification of the present application:

> Primitive generator and test applicator 420 generates primitives (i.e.,
> program modules) which are based on the classification parameters 403.
> The generated primitives (not shown in FIG. 4) are used to test the target
> data packet for compliance with the classification parameters 403 with
> which the primitives are associated.

See Specification at paragraph [0069]. Example operations performed by the

program modules include mask and range and mask and compare operations. *See*

Specification at paragraphs [0143]-[0159] and FIGS. 15A, 15B and 15C. The

generation of program modules as recited in claim 1 provides flexibility because

the various testing operations that can be performed can be easily modified since

the operations are defined in software.

For the abovementioned reasons, Applicants submit that components of Carr, implemented in a DRAM process, do not meet the disclosure of Applicant's generated "program modules" recited in independent claims 1, 14, 15 and 27. Thus, Applicants arguments' that Carr does not teach the generation of software-implemented program modules as presented in the Amendment and Reply filed September 22, 2006 still stand.

The Examiner's Assertion that the recitation "network interface" has no patentable weight because the recitation occurs within the preamble, and even if placed in the body of the claim, would be met by the disclosure of Carr is Incorrect and misses the point

The Examiner misses the point in Applicants Pre-Appeal Brief Arguments. Applicants stated that, in contrast to the teachings of Carr, the independent claims of the present application recite a network interface or a computer program product that is capable of generating "a program module" that tests "for adherence to at least one corresponding classification parameter" in a plurality of received classification parameters. The teachings of Carr, regardless of how the "program modules" are produced, still fail to teach the above recited feature of independent claims 1, 14, 15 and 27.

Applicants without acquiescing to the Examiners arguments, reiterate that Carr fails to teach or suggest generating "a program module" that tests "for adherence to at least one corresponding classification parameter" in a plurality of received classification parameters, as recited in the independent claims of the present application. As described in the specification of the present application:

> Primitive generator and test applicator 420 generates primitives (i.e., program modules) which are based on the classification parameters 403. The generated primitives (not shown in FIG. 4) are used to test the target data packet for compliance with the classification parameters 403 with which the primitives are associated.

See Specification at paragraph [0069]. Example operations performed by the program modules include mask and range and mask and compare operations. *See* Specification at paragraphs [0143]-[0159] and FIGS. 15A, 15B and 15C. The generation of program modules as recited in the independent claims provides flexibility because the various testing operations that can be performed can be easily modified since the operations are defined in software. Moreover, the software modules can be executed in any order. *See* Specification at paragraph [0015] ("Further, the program modules of the present invention can be executed in any order. Thus, when randomly ordered classification criteria are encountered, the criteria does not have to be reordered.").

Carr must fail as an anticipatory reference because there is simply no structure disclosed in that reference that is capable of generating program modules as recited by the independent claims of the present application. The structure in Carr that is most similar to the recited program module is comparison block 50, which performs different types of comparisons between selected classification parameters and information derived from the header of a packet. However, Carr does not teach or suggest a network interface, computer program product, **or any other structure** that is capable of "generating" comparison block 50—rather, comparison block 50 is presumably designed prior to implementation of Carr's system and is fixed during operation.

Despite this shortcoming of Carr, the Examiner has made several arguments to support the rejection of the independent claims of the present application over Carr. In the advisory action issued October 3, 2006, the Examiner argued that Carr in fact suggests that the components described therein could be controlled or implemented in software. Applicants strongly disagree with each of these assertions. However, even if

each of these assertions were true, and Carr's comparison block 50 could be considered a

"program module" within the meaning of independent claims 1, 14, 15 and 27, Carr still

fails to teach or suggest the <u>generation</u> of comparison block 50 by a network interface,

computer program product, or any other structure as recited by the independent claims of

the present application.

Conclusion with Respect to the Examiner's Comments

Thus based on the foregoing arguments, and the arguments previously made in

the Amendment and Reply filed September 22, 2006 (reproduced below), Applicants

respectfully submit that the rejection of claims 1-39 based on the cited art be

reconsidered and withdrawn.

Rejections under 35 U.S.C. § 101

Claims 1, 14, and 15 were rejected under 35 U.S.C. § 101 because the Examiner

alleged that the claims were directed to non-statutory subject matter.   Applicants

respectfully traverse.

In the rejection of independent claim 1, the Examiner alleges that the claim is not

directed to a practical application because there is no requirement to produce a "physical

transformation and the invention as claimed does not produce a useful, concrete, and

tangible result." (Office Action, page 2). A claim complies with the statutory

requirements of 35 U.S.C. § 101 if the claim recites a process, machine, manufacture or

composition of matter and it does not fall within one of the judicial exceptions to

patentability (i.e., Law of Nature, Natural Phenomenon, or Abstract Idea).

Independent claim 1 recites, in step (f), "processing the data packet based on said test results from said plurality of program modules." Applicants assert that the claim, as a whole, is directed to a useful, concrete and tangible result. The processing of a data packet is clearly a useful and tangible result and finds support within the Specification. Specifically, in paragraph [0123] of the Specification, processing of a data packet includes, but is not limited to, suppression of the packet header and transmission of the data packet on a particular service flow, both useful and tangible results. The Examiner acknowledges in page 2 of the present Office Action, that "transmission of [a] packet" is considered a practical application that produces a useful, concrete, and tangible result. Therefore, it follows that claim 1, as originally recited, conforms to the Examiner's description of a practical application. Furthermore, dependent claims 3, 4, and 5 recite features of "processing [a] data packet," as recited in claim 1, and produce useful, concrete and tangible results. Finally, because the process substantially produces the same result again and again, claim 1 produces a concrete result. Accordingly, claim 1 is directed to a practical application and is therefore statutory subject matter.

The Examiner alleges that claim 14 is not directed to a practical application because there is no requirement to produce a "physical transformation and the invention as claimed does not produce a useful, concrete, and tangible result." (Office Action, page 2). For the same reasons as claim 1 provided above, claim 14 is also directed to a practical application and is therefore statutory subject matter noted above.

The Examiner alleges that claim 15 is not directed to a practical application because there is no requirement to produce a "physical transformation and the invention as claimed does not produce a useful, concrete, and tangible result." (Office Action, page

2). For the same reasons as claim 1 provided above, claim 15 is also directed to a

practical application and is therefore statutory subject matter noted above.

Accordingly, Applicants respectfully request that the Examiner reconsider and

withdraw these rejections.

Rejections Under 35 U.S.C. § 102

The Examiner has rejected claims 1, 4, 5, 10-15, 18, 19 and 24-27 under

35 U.S.C. § 102(e) as being anticipated by Carr. For the reasons set forth below,

Applicants respectfully traverse.

Independent claim 1 is directed to a method for classifying a data packet in a

network interface. The method includes the steps of:

(a) receiving a plurality of classification parameters;

(b) generating a plurality of program modules, each of said plurality of
program modules for testing for adherence to at least one corresponding
classification parameter;

(c) receiving the data packet;

(d) generating a header, said header indicating whether one or more
predefined fields are present in the data packet and identifying a location
of said one or more predefined fields in the data packet when present;

(e) executing each of said plurality of program modules, wherein each of
said plurality of program modules receives said header and generates a
test result based on contents of said header and contents of the data
packet; and

(f) processing the data packet based on said test results from said
plurality of program modules.

Carr does not teach or suggest each and every one of the foregoing steps of claim 1. For

example, as will be explained below, Carr does not teach or suggest at least "generating a

plurality of program modules, each of said plurality of program modules for testing for

adherence to at least one corresponding classification parameter".

Carr is directed to a method and apparatus for packet classification that stores

"rules" or parameters for classifying the packets in a memory structure, such as a

DRAM. *See* Carr, col. 2, ll. 32-33 ("The rules or parameters for classifying the packets

are stored in a memory structure.") The purported benefits of storing the classification

parameters in a memory structure include the ability to store a large number of parameter

sets and easy modification and selection of the parameters for classification purposes.

See Carr, col. 2, l. 57-col. 3, l. 4. Once the classification parameters have been selected,

they are provided to a comparison block 50 that includes comparators that perform

different types of comparisons between the selected classification parameters and

information derived from the header of a packet (termed a "key"). *See* Carr, col. 7, ll.

26-28 ("The comparison block 50 illustrated in FIG. 2 includes comparators that perform

different types of comparisons on the information in the key 24 and the rule 42."). Such

comparison operations include a 5-bit equal compare, a 32-bit mask and compare, a 12-

bit mask and compare, an 8-bit mask and range, and a 16-bit range. *See* Carr, col. 7, ll.

29-60, FIG. 2. According to Carr, the comparison block is implemented in hardware.

See Car, col. 12, ll. 9-11 ("Preferably, all the components illustrated in FIG. 3 are

implemented on a single integrated circuit that is dedicated to performing packet

classification operations.").

In contrast to the teachings of Carr, the invention of claim 1 does not perform

comparison operations in hardware. Rather, in claim 1, a program module is generated

that tests "for adherence to at least one corresponding classification parameter." As

described in the specification of the present application:

> Primitive generator and test applicator 420 generates primitives (i.e.,
> program modules) which are based on the classification parameters 403.
> The generated primitives (not shown in FIG. 4) are used to test the target
> data packet for compliance with the classification parameters 403 with
> which the primitives are associated.

See Specification at paragraph [0069]. Example operations performed by the program

modules include mask and range and mask and compare operations. *See* Specification at

paragraphs [0143]-[0159] and FIGS. 15A, 15B and 15C. The generation of program

modules as recited in claim 1 provides flexibility because the various testing operations

that can be performed can be easily modified since the operations are defined in

software. Moreover, the software modules can be executed in any order. *See*

Specification at paragraph [0015] ("Further, the program modules of the present

invention can be executed in any order. Thus, when randomly ordered classification

criteria are encountered, the criteria does not have to be reordered.").

    As noted above, in Carr, the various testing operations (e.g.., a 5-bit equal

compare, a 32-bit mask and compare, a 12-bit mask and compare, an 8-bit mask and

range, and a 16-bit range) are implemented in hardware and are thus not easily modified

or reordered. Furthermore, each of the testing operations must be configured in advance

of receipt of the classification parameters or "rules", whereas in the invention of claim 1,

the program modules are generated after receiving the classification parameters.

    The Examiner asserts that the feature of "generating a plurality of program

modules for testing for adherence to at least one corresponding classification parameter"

is taught in FIGS. 1, 3 and 4 and at column 2, lines 31-36 of Carr. *See* Office Action at

pp. 3-4. In particular, the Examiner asserts that the "rules" stored in Carr's memory

structure correspond to the recited "plurality of program modules". However, as noted

above, the "rules" stored in Carr's memory structure are simply classification parameters

and thus are analogous to the recited "plurality of classification parameters" recited in

claim 1, not the recited "plurality of program modules". Furthermore, to the extent the

Examiner has equated Carr's comparison block with the "plurality of program modules",

the differences between the hardware-implemented comparison block and the software-

implemented "plurality of program modules" have already been discussed above.

Because Carr does not teach each and every feature of claim 1, it cannot

anticipate that claim. Dependent claims 4, 5 and 10-13 are also not anticipated by Carr

for the same reasons as independent claim 1 from which they depend and further in view

of their own respective features. Accordingly, Applicants respectfully request that the

rejection of claims 1, 4, 5 and 10-13 under 35 U.S.C. § 102(e) be reconsidered and

withdrawn.

Independent claim 14 is directed to a method for classifying a data packet in a

network interface that includes the step of "generating a plurality of optimized program

modules, each of said plurality of program modules for testing for adherence to at least

one corresponding classification parameter". As noted above in regard to claim 1, Carr

does not teach or suggest the generation of such program modules. Therefore, Carr

cannot anticipate claim 14. Accordingly, Applicants respectfully request that the

rejection of claim 14 under 35 U.S.C. § 102(e) be reconsidered and withdrawn.

Independent claim 15 is directed to a method of classifying a data packet in a

network interface that includes the step of "generating a plurality of program modules,

each of said plurality of program modules for testing for adherence to at least one

corresponding classification parameter". As noted above in regard to claim 1, Carr does

not teach or suggest the generation of such program modules. Therefore, Carr cannot

anticipate claim 15. Dependent claims 18, 19 and 24-26 are also not anticipated by Carr

for the same reasons as independent claim 15 from which they depend and further in

view of their own respective features. Accordingly, Applicants respectfully request that

the rejection of claims 15, 18, 19 and 24-26 under 35 U.S.C. § 102(e) be reconsidered

and withdrawn.

Independent claim 27 is directed to "a computer program product comprising a

computer useable medium having computer program logic for enabling a processor in a

network interface to classify a data packet". The computer program product includes

"means for enabling the processor to generate a plurality of program modules, each of

said plurality of program modules for testing for adherence to at least one corresponding

classification parameter". As noted above in regard to claim 1, Carr does not teach or

suggest such a means. Therefore, Carr cannot anticipate claim 27. Accordingly,

Applicants respectfully request that the rejection of claim 27 under 35 U.S.C. § 102(e) be

reconsidered and withdrawn.

Rejections Under 35 U.S.C. § 103

Claims 2, 6-9, 16, 20-23, 28 and 30-39

The Examiner has rejected claims 2, 6-9, 16, 20-23, 28 and 30-39 under

35 U.S.C. § 103(a) as being unpatentable over Carr in view of Synnestvedt. Synnestvedt

does not in any way remedy the deficiencies of Carr with respect to independent claims

1, 15 and 27 as discussed above. For example, like Carr, Synnestvedt does not teach or suggest the generation of a plurality of program modules, each of the plurality of program modules for testing for adherence to at least one corresponding classification parameter.

Consequently, the combination of Carr and Synnestvedt cannot render independent claims 1, 15 or 27 obvious. Claims 2 and 6-9 are not rendered the obvious by the combination of Carr and Synnestvedt for the same reasons as independent claim 1 from which they depend and further in view of their own respective features. Claims 16 and 20-23 are not rendered obvious by the combination of Carr and Synnestvedt for the same reasons as independent claim 15 from which they depend and further in view of their own respective features. Claims 28 and 30-39 are not rendered obvious by the combination of Carr and Synnestvedt for the same reasons as independent claim 27 from which they depend and further in view of their own respective features. In view of the foregoing, Applicants respectfully request that the rejection of claims 2, 6-9, 16, 20-23, 28 and 30-39 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Claims 3 and 17

The Examiner has rejected claims 3 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Carr in view of U.S. Patent No. 6,570,884 to Connery *et al.* ("Connery"). Connery does not in any way remedy the deficiencies of Carr with respect to independent claims 1, 15 and 27 as discussed above. For example, like Carr, Connery does not teach or suggest the generation of a plurality of program modules, each of the plurality of program modules for testing for adherence to at least one corresponding classification parameter.

Consequently, the combination of Carr and Connery cannot render independent claims 1, 15 or 27 obvious. Claim 3 is not rendered the obvious by the combination of Carr and Connery for the same reasons as independent claim 1 from which it depends and further in view of its own respective features. Claim 17 is not rendered obvious by the combination of Carr and Connery for the same reasons as independent claim 15 from which it depends and further in view of its own respective features. In view of the foregoing, Applicants respectfully request that the rejection of claims 3 and 17 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Claim 29

The Examiner has rejected claim 29 under 35 U.S.C. § 103(a) as being unpatentable over Carr in view of Synnestvedt and further in view of Connery. Neither Synnestvedt nor Connery in any way remedy the deficiencies of Carr with respect to independent claims 1, 15 and 27 as discussed above. For example, like Carr, Synnestvedt and Connery do not teach or suggest the generation of a plurality of program modules, each of the plurality of program modules for testing for adherence to at least one corresponding classification parameter.

Consequently, the combination of Carr, Synnestvedt and Connery cannot render independent claims 1, 15, or 27 obvious. Claim 29 is not rendered the obvious by the combination of Carr and Connery for the same reasons as independent claim 27 from which it depends and further in view of its own respective features. In view of the foregoing, Applicants respectfully request that the rejection of claim 29 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.
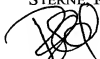
Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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